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Mr. Gilligan:

Thank you for allowing me to review the case of Holcombe et al., David Colbath - Plaintiff vs. The United States of America, defendant. In the preparation of this letter, I had the opportunity to review the following items pertaining to this case listed below.

I have been asked to render my opinions as a physician trained in neurological medicine with an expertise in Neurology. I am currently employed as the Medical Director of Epilepsy at the MetroHealth Hospital Systems and as an Associate Professor of Clinical Neurology at Case Western Reserve University School of Medicine. Until 9/1/2020, I was previously employed as an Assistant Professor of Clinical Neurology at the Perelman School of Medicine at the University of Pennsylvania, where I was in my 7th year on the faculty. I was the associate director for the neurology residency and the medical student clerkship. As an attending physician, I frequently supervised fellows, residents, interns, and medical students and now also supervise nurse practitioners. I continue to collaborate with consulting physicians in the care of my patients with various neurological issues. Prior to going to medical school, I completed a Master's degree and part of a doctoral program in psychology with a focus in neuropsychology. For further information about my qualifications, please refer to my curriculum vita.

Case Materials Reviewed:

Dr. Willingham Reports, 9.17.2018 and 2.18.2020
Dr. Todd Report
Dr. Ticknor Records and Report
Dr. Nikki Frousakis PTSD Assessment Report
Dr. Dean Zincone office notes (evaluation for ADHD)
EMG/NCS 8/28/2018 by Dr. William Janes
Deposition Transcript Colbath David 2020.05.27
Updated Life Care Plan
BAMC records which includes notes from the Center for the Intrepid (CFI)
Billing

Consults (removal of superficial foreign body of left breast, bariatric surgeon, osteoarthritis of knee)
Correspondence with insurance company
EKG- normal (1/19/2016)
Hospital notes (inpatient rehabilitation)
Lab Results
Log Notes
Lead Toxicity-U.S. Stds for Lead Levels
Blood Lead Levels in Emergency Department Patients
Neuropathies associated with excessive exposure to lead
Neurotoxic Effects and Biomarkers of Lead Exposure
Neuropsychological Effects of Lead Toxicity
WHO-Lead poisoning and health

Summary of case:
Ms. David Colbath sustained multiple (11) gunshot wounds (8 or 9 from direct shots and 3 were from bullets/shrapnel that ricocheted) on 11/5/2017 in the mass shooting at the First Baptist Church in Sutherland Springs, Texas. He was taken to San Antonio Military Medical Center (SAMMC). According to records and Mr. Colbath's personal account, he was shot in his back under his neck (he had that bullet taken out last year), 2 in the right calf, right thigh, 3 into his right buttock (2 of which hit his colon), right forearm, right elbow, bilateral ankles, and left chest/thorax. He had a ballistic injury to the right radial artery. He was admitted to the trauma unit and underwent multiple procedures including right radial artery repair and right median nerve repair, and s/p open reduction and internal fixation (ORIF) of left medial malleolus. Most of the whole bullets were removed within 2 weeks of the shooting, another removed almost 2 years after the shooting due to causing pain (right side of his chest). He still has at least one retained bullet/shrapnel in left leg and pelvis. He was discharged from SAMMC to New Braunfels Regional Rehabilitation Hospital on 11/27/2017 and remained there through 12/22/2017. He progressed well while at rehabilitation and achieved a modified independence level in a wheelchair on discharge to home with health services. He was then treated as an outpatient at the Center for the Intrepid (CFI) where he received physical therapy, occupational therapy, and counseling and continued to improve. Currently, he continues to have hypersensitivity of the left hand, digits IV and V, and an ulnar sensory loss of forearm with shooting pain, right upper extremity weakness, numbness and pain, including reduced ability to use his right thumb, left ankle pain and residual pain in his buttocks. He stated he also developed memory issues.

Past medical history: In 2015 he suffered a left metacarpal fracture during a motorcycle accident and needed surgical reconstruction of his left hand. He had fractured his right wrist twice, treated non-surgically, at age 20 and 25. He also fell off a horse two times. Hospitalized for one day following a fall with bruising to the left thorax in July of 2017.
Past psychiatric history: Mr. Colbath received counseling for depression following his second divorce in 2008. He was also prescribed medications for insomnia including Ambien and Seroquel. He participated in treatment for 18 months.
Social history: Recently married. He was a heavy user of alcohol in the past but not for many years.
Work history: Worked building and installing fences with his self-owned construction company. He also had additional skills in welding. States prior to shooting he was able to estimate jobs accurately in his head but now post shooting has made mistakes that have cost him money.
Patient can now drive to work site but can no longer do physical work. He was able to do the work of 2 men prior to the shooting. Gained 40 pounds.

6/29/18, Raul Marin – PM&R at the CFI
1. Left ankle GSW with open fx requiring ORIF and reconstructive surgery
2. Right calf GSW (entrance post calf exit ankle, open fx post ORIF, fasciotomy, reconstructive surgery)
3. GSWs (multiple) to the right glut max region
4. GSW to the base of the neck at midline sparing spine and spinal cord and wedging itself in the anterior left rib cage
5. GSW to the right proximal forearm sparing bone and exiting on volar side but injuring radial and ulnar nerves as well as severance of cubital artery s/p venous allograft reconstruction.
Current issues:
1. Somatic pain: a. Left ankle: on off daily aching baseline 3-4/10 with superimposed 5-6/10 pain when he first loads weight on the foot or with cold weather and rain. Pain resolves as he walks. There is also swelling related pressure pain 4/10 that varies day to day. Has custom made thigh high compression stocking but does not use as it has two parts, a foot bootie and a leg compression. The junction between the two creates deep indentation in skin that causes pain. b. Bilateral Knees: 5/10 on off pre-existing patellofemoral arthrosis related pain with + movie theater sign. Remains unchanged and stable. c. Right sacral pain s/p GSW: previous constant avg 6/10 pain also made worse by bowel movement is now resolved. Note that he has a fluid collection under right glut that was drained once at ER and CT scans show it is shrinking over time. Pt also states symptoms are improving gradually over time.
2. **Nerve pain**: on off self-limited 1-2 second 8-9/10 electrical/stabbing shooting left hand pains are **now minimal and he has stopped using gabapentin.** (3/2/2018: Nerve pain was previous on off self-limited 1-2 second 8-9/10 electrical/stabbing shooting left hand pains that occurred at a rate of 20/day and worse at night have improved since increase of gabapentin with decreased frequency by at least 50%. Previous constant 6/10 pressure burning pain on the hand (particularly on the thumb) has essentially resolved).
3. Edema: bilateral legs and ankles left > right continues although it is variable day to day and is no longer pitting. He ran out of HCTZ but noted no change in pattern of swelling. See left ankle pain regarding compression stockings.
4. Sleep: good. At most has one restless night every 10 days. Elavil works very. Also, sleep number works like a charm.
5. Behavior health: previous feelings of survivor's guilt, anxiety, depression, hypervigilance, paranoia, avoidance behaviors, and hyper alertness have improved and he is now off celexa. He is now public speaking frequently which helps him as he helps others. Also has started to slowly go back to work as tolerated.

6/28/2018, Jorge Torres - JB San Antonio Military Treatment Facility, Psychiatry CFI
The Chief Complaint: Depressed and anxious mood, Emotional lability and irritability. Has been having recurrent nightmares but those are beginning to improve.
Medication Side Effects: maybe some cognitive slowing.
Progressing nicely:
FEB2018 - Feels he has adapted well to his trauma but starting to again have a depressed mood.
16FEB2018 - Sleep disturbances: Has struggled with sleep initiation and middle of the night awakening. Likely related to his decreasing use of narcotics. Difficulty with sleep initiation. Doing much better with med regimen Nightmares improving.
MAR2018 - Stating that his mood is okay again. Improve quality and quantity of sleep to 6hrs. Currently resolved as long as he takes his amitriptyline. Appears resolved 12MAR2018.
Memory lapses or loss - Says it is hard to focus and memory is not what it was prior to the event. Could be related to his med regimen or to failing to attend because of intrusive thoughts or a lot going on in

his life at the time. Starting to make progress in this area 7FEB2018. Starting to appear clearer 16FEB2018.
JUN2018 - Feeling like mood has improved by 50%, starting to go out on activities with families. Doing well with getting out and interacting with others (resolved) 28JUN2018.

9/17/2018 Dr. Alex Willingham Summary – First Report (PM&R)
He initially saw Mr. Colbath on 7/27/2018.
Medications: Gabapentin now off, Citalopram, Amitriptyline 75 mg qhs, hydrocodone, colace, multivitamin, baby aspirin.
Examination:
Motor – Lower extremities 5/5 except TA and EHL 4/5. Bilateral gluteus medialis weakened. Scar at medial left ankle. Upper extremities 5/5 except 4-/5 in the intrinsics. Decreased ulnar on the left. Decreased motor and ulnar for FPL and FDI on right. Defect at the volar aspect of the right forearm. He cannot tip oppose pinkie to thumb to index finger on right hand. Can lateral pinch. There was no positive interossei effect with DTRs.
Sensation - Decreased sensation left medial ankle, digit IV and V left hand (numbness persists in the Ieft ulnar distribution with a burning pain in the ulnar nerve distribution distally, especially with pulling motions involving the left upper extremity), right dorsum of foot, right lateral calf in fibular distribution and right buttock. Sensation absent on medial tip of digit II, partially decreased digit IV and III and MCP to DIP.
Impression: Residual peripheral nerve motor and sensory right median palsies. Chronic neuropathic pain, depression with Post Traumatic Stress Disorder (PTSD) symptoms of nightmares, startles, hypervigilance.
Plan: Neuropsychologic battery, resume gabapentin 300 mg three times a day for neuropathic pain, EMG/NCS bilateral upper extremities. Will likely need a day program for acquired brain injury and access to adjustment counseling. Sleep study for likely sleep apnea. Referral to Dr. Pilcher for bariatric surgery consultation.

10/16/2018 Dr. Alex Willingham office visit (PM&R)
Mr. Colbath stated he felt his PTSD was better. He was still having memory problems. His weight remained elevated and he was interested in lap band surgery. He can do cardio exercise at current weight without gravity assist. Both ankles and knees are very painful with load bearing. Due to gunshot wound to buttocks, buttock asymmetry. Decreased neck range of motion on the left, full on the right. Mentioned neuropsychological testing was on hold but that he still had memory issues.

2/18/2020 Dr. Alex Willingham – Second Report (PM&R)
Since the last report on 9.17.2018, Mr. Colbath was seen on 12/3/18, 2/14/19, and 12/23/19.
12/3/18: Dreams related to PTSD persisted. Saw a counselor weekly in the past. Evaluated by bariatric surgeon and felt "excellent candidate" for a sleeve/gastric procedure. Attending massage therapy for buttock muscles with some improvement. Mis-bid 3-4 jobs and not paid.
Physical exam: No change in his hands, still having grasp limitations of right hand. Fingers have adequate flexion except his thumb. Numbness still persisted on left ulnar nerve distally with burning pain in ulnar nerve distribution. 3+ pitting edema in bilateral lower extremities.
2/14/19: Passed on bariatric surgery due to high out of pocket costs. Pain intense due to cold spells. Physical exam: left ankle not as swollen. Still impaired grip and strength both left and right, but right is weaker of the two. No right elbow contracture. Gait: needle stabbing pain in both ankles a couple times per day. Lymphedema improved in bilateral lower extremities. Counseling sessions at SAMMC ran out.

Pursuing counseling at Ecumenical Center in La Vernia, Texas, sponsored by governor grants from state of Texas.
12/23/19: Cramping at times. 312.6 pounds. Best weight was 298 pounds 6 weeks prior to current weight. Prior to shooting, weighted 270 pounds [In family medicine notes from 6/2017 he weighed 298 and had an elevated BMI, which was prior to the shooting].
Work: Stated had plenty of work but tough due to diminished physicality, with significant diminished capacity. "Patient felt he worked at 50-60% pace compared to how his son worked [Son is in his 30s]. Noticed more dropping of objects in right hand. Takes folding chair to work to sit periodically throughout day due to left ankle pain. Continues to have median and ulnar nerve palsies with pain.
Counseling: Started again, secondary to "too tender feelings with "LMDR" with sequential light sequences as a form of biofeedback and also vibratory items for hands.
Medications: Adderall – memory utilization, Tylenol and ibuprofen for pain.
Receives chiropractic care for his low back pain to buttocks.
Assessment: "The nerve injuries are going to remain for life as it is 2 years post injury." "Event continues to cause physical and mental issues, it will impact future work life capacity. He persists with diminished physical capacity, permanent nerve palsies…and post-traumatic stress disorder…."

3/17/18, 3/24/18, 12/15/19 Dr. Christopher Ticknor, Psychiatric Evaluation
After the shooting, Mr. Colbath had to regain the ability to walk and to overcome additional multiple physical and orthopedic injuries. Following Mr. Colbath's discharge from New Braunfels Regional Rehabilitation Hospital about 6 weeks after the shooting, he enrolled in out-patient physical therapy at the Intrepid Center at Ft. Sam Houston. He continues to this day to be in severe pain at times. Mr. Colbath noted he has had little or no income since November 2017 because he cannot work as he used to in his business doing physical labor. His son has been helping out as necessary to keep the business going. As of December 2019, he had resumed driving but with significant pain limiting many activities. It was in March 2018 that he was physically capable of driving for himself.
Mr. Colbath was interviewed a third time on December 15, 2019 in order to update his previous evaluations. When asked how he has been doing in the last four to six months, Mr. Colbath indicated that he has continued to work part-time but suffers daily, at times with excruciating pain. Psychologically, he has ups and downs that vary from acute depression to profound symptoms of PTSD. Mr. Colbath was being prescribed Amitriptyline at night to help him with sleep and nightmares. The nightmares are almost every week.
"David Colbath has now developed cognitive signs and symptoms that are very concerning. He reports memory loss, forgetfulness, concentration and focus difficulties and difficulty completing tasks. It is likely these symptoms are related to PTSD and depression and may or may not respond to more intensive counseling therapy. Another possibility is that Mr. Colbath may be experiencing long-term neurocognitive difficulties from toxic lead exposure from remaining bullet fragments in his body. These shrapnel fragments are likely permanent and will likely cause additional physical and mental problems in the future. Mr. Colbath's family physician prescribed Adderall for him because of the distractions, poor focus, decreased concentration and what he described as serious memory difficulties. He is concerned that he has symptoms of dementia. However, from further examination, these symptoms come and go which would be uncharacteristic of dementia, but characteristic of the distractions, poor concentrations and cognitive impairment that often accompanies PTSD. He may have both PTSD and early dementia from trauma and lead exposure."
For counseling he saw Terry Davis for EMDR (Eye Movement Desensitization Response Training).
Mr. Colbath also has a chiropractor, Dr. Dickinson, who is helping with pain in his neck and lower back. He has been told he has cervical C4-C6 neck compression issues and bone spurs that are contributing to

his pain. Mr. Colbath believes that the shooting has made these significantly worse because of his injuries and his prolonged rehabilitation which was marginally successful.
Opinions/Conclusions:
- Severe symptoms of PTSD that have not responded to recent or current efforts at counseling therapy to address symptoms of insomnia, nightmares, flashbacks, and extreme emotional hypersensitivity and reactivity.
- Chronic pain.
- Mr. Colbath will not be able to return to consistently perform his usual daily employment activities for an indefinite period of time because of physical restrictions. These limitations are likely permanent. Mr. Colbath will also continue in the future to face psychological restrictions and experience significant limitations affecting employment opportunities from conditions of anxiety/depression and PTSD. His work choices are, in my opinion, are very limited given his educational background, history of working jobs requiring physical labor, and primarily working for himself. Mr. Colbath's future job prospects now at age 58, and which may or may not be amenable to re-training, are also very limited. Consultation with a vocational rehabilitation expert is strongly recommended for Mr. Colbath.
- Will require substantial intensive future psychiatric and psychological care and treatment. Mr. Colbath is presently prescribed Amitriptyline, an antidepressant. Mr. Colbath will require additional, long-term intensive psychotherapy counseling to assist him in managing his severe symptoms of chronic pain, PTSD, depression, and insomnia. Consideration should be given to a longer term, residential, in-patient psychiatric and physical therapy program such as TIRR (Texas Institute of Rehabilitation &Recovery) in Houston and possibly in conjunction with the Menninger Foundation Clinic in Houston to address Mr. Colbath's rehabilitation needs, need for psychiatric and psychotherapy counseling, and medication management while receiving intensive physical therapy.

<u>10/19/2020 Dr. Nikki Frousakis Report (Psychologist)</u>
According to medical reports, Mr. Colbath did not struggle with sleep problems leading up to the incident. He typically slept 7 hours a night without any sleep aids or medications [this is incorrect as he had a history of issues with insomnia years prior]. Following the shooting, getting a good night's rest became nearly impossible. Mr. Colbath indicated that he found it difficult to sleep mostly because of his physical pain. However, as he lay uncomfortably in bed or on the couch wishing to fall asleep, he would begin thinking about the incident. In addition to sleep disturbances and intrusive thoughts, Mr. Colbath described high levels of irritability and hypervigilance following the shooting. Information gathered from the review of records indicate that Mr. Colbath developed posttraumatic stress disorder (PTSD) following the incident. He has consistently endorsed numerous PTSD symptoms in all his mental health evaluations since the time of the shooting. When he physically could, he drove and flew around the country sharing his "testimony" of the experience.
During the examination, Mr. Colbath reported that he takes Adderall for problems with concentration. He was initially prescribed this medication in mid-2019. He stated that he has noticed a steady decline in his memory since the incident. **According to the record, he has significantly high levels of lead in his blood (lead toxicity). This evaluator is unable to determine if his problems with concentration and memory stem from lead toxicity, are a symptom related to PTSD, or are a combination of both.**
Since the shooting, records indicate that Mr. Colbath was diagnosed with PTSD and first received mental health treatment (i.e., 11 sessions of individual therapy by a licensed professional counselor) at the Oakwood Counseling Center. He then enrolled in the Posttraumatic Stress Clinic at the Center for the Intrepid at Brooke Army Medical Center. Records indicate that he participated in individual and group counseling sessions. At that time, he was prescribed Amitriptyline, a tricyclic antidepressant, for depression, sleep, and nightmares. In December 2019, records show that Mr. Colbath sought psychological treatment at The Ecumenical Center. He participated in 1 or 2 sessions of Eye Movement

Desensitization Reprocessing therapy (EMDR) and found it helpful. Currently, he is taking Adderall for help with concentration and memory. It is unclear when he discontinued use of the antidepressant. Additionally, he is taking Tylenol and Ibuprofen daily to help manage physical pain and swelling in his ankles. He was prescribed Gabapentin for pain stemming from the nerve damage caused by his injuries. He discontinued this medication because it makes him "foggy", which can be dangerous for his work.
Examination: On the MMSE-2, he scored a 14 out of 16 (t-score = 41), specifically missing 2 of 3 items in the Recall section. This score suggests moderate cognitive impairment. A more comprehensive and thorough neuropsychological examination is required to confirm the scope and severity of his cognitive impairment.
Diagnostic Summary: Based on the results of this assessment, Mr. Colbath meets diagnostic criteria for chronic PTSD. These symptoms are severe and cause clinically significant distress and impairment in functioning. Mr. Colbath copes with his symptoms primarily through avoidance, distraction, working, prayer, attending and leading Bible study classes, and sharing his story publicly. There is no evidence that Mr. Colbath met criteria for PTSD prior to the incident.
Recommendations: It is recommended that he receive a full course of evidence-based, trauma-focused psychotherapy with a highly skilled and trained mental health care provider. Success in treatment also requires Mr. Colbath to be fully engaged, regularly attend all treatment sessions, and strictly follow all treatment guidelines and recommendations. Trauma-focused psychotherapies, such as Cognitive Processing Therapy, Prolonged Exposure, Eye Movement Desensitization and Reprocessing, and Written Exposure Therapy, are the most effective and highly recommended type of treatment for PTSD.

Dr. Dean Zincone, Family Medicine
1/22/2020 visit:
Treated for ADHD
Having muscle cramping to the arms, hands, calves, thighs, and toes for the past year. It occurs mostly in the evenings and nights. Advised that he have his magnesium and phosphorus levels checked.
ROS: GENITOURINARY: Positive for nocturia (x6-7). MUSCULOSKELETAL: Positive for muscle cramping-arms, calves, toes, and thigs. NEUROLOGICAL: Negative for dizziness and headaches. PSYCHIATRIC: Negative for sleep disturbance.
6/26/2019 and 7/3/2019 visits: presented with memory loss.
PLAN: MMSE 30/30 PLAN; reassured; obs
6/5/2017 visit: Patient complains of knee pain. The affected area is the left knee. He describes the intensity of pain as moderate, aching and sharp. Associated symptoms include swelling.
Patient is also concerned about having gout. He has had several flair ups of great toe pain. His father had a prescription of indomethacin that did help. He would like to have his uric acid level checked (found to have elevated uric acid on labs).
Ht: 5 ft, 8 in; Wt: 298 lbs, BMI 45.3 (HIGH)
2/2/2016 visit: He has had a problem with erectile dysfunction for the past year. Mostly initiating erections. Prior Hx of Depression. Alcohol: Drinks alcohol on a regular basis.
1/19/2016 and 1/26/2016 visits:
HPI: Mr. Colbath is here for a follow up visit regarding his decreased libido, and is concerned he may have low Testosterone. He was seen last week and is here to review his lab results.
ROS: CONSTITUTIONAL: Positive for **fatigue** and unintentional weight gain (75 pounds; past 30 months). RESPIRATORY: **Positive for dyspnea (with mild exertion**). GASTROINTESTINAL: Positive for acid reflux symptoms ("heart burn"). GENITOURINARY: **Positive for nocturia and (x0-4) decreased libido last 6 to 8 months.** MUSCULOSKELETAL: **Positive for leg cramps (improving). NEUROLOGICAL: Positive for memory loss (short term past year).** Negative for dizziness or headaches. ENDOCRINE: Negative for

polydipsia and polyphagia. **PSYCHIATRIC: Positive for insomnia** (sleeps well with taking Melatonin). Negative for depression.
Ht: 5 ft, 8 in; Wt: 286 lbs; BMI: 43.5

3/26/2020 Dr. Robert E. Todd Independent medical evaluation
Independent medical evaluation regarding the long-term sequelae of lead toxicity related injuries. Mr. Colbath complains of memory issues and persistent left ulnar nerve burning pain and allodynia in left forearm (does have previous injury of left hand that needed reconstruction prior to shooting). He has a diagnosis of PTSD. He reported cognitive issues with not being able to accurate calculate job estimates post the shooting and being more forgetful, forgetting he already did something or an appointment. He stated he has issues with attention. While welding he may forget the tip is still hot after the equipment is turned off and burn himself. He forgot the saw blade was still spinning once and cut himself. He was prescribed Adderall but states he still has issues with short-term memory and difficulty with associating names with faces. Nurse Workman states his personality has changed and he gets more agitated. Mr. Colbath endorses constant pain around his injury sights involving his right arm, both legs and left side of neck radiating to 4th and 5th fingers in left hand. At night he has a sensation of itching in his toes which prevents him from falling sleep, resulting in insomnia. States has tried Melatonin, Advil PM and SleepZZZ among others, but none of those have worked. He also gets cramping in muscles in hands and feet at night on occasion that is bothersome.
Testing: Montreal Cognitive Assessment (MoCA) 27/30. He lost one point in Visuospatial for being unable to correctly copy a picture of a cube, one point for Delayed Recall and one point for Orientation (not knowing the exact date (23rd)).
Examination:
Motor – Strength normal. Atrophy in right arm. Coordination intact.
Sensory - Sensory examination to pin found a distal decrease in pin sensation bilaterally with the right being more affected than the left. Proximally pin sensation improved but did not normalize on the right. He reported that the proximal sensation on the right was 50% greater than the distal sensation on the right. Distal vibration sensation was absent bilaterally. It improved and was symmetric at the patellae bilaterally. Joint position sense was normal 4/4 on the left and 3/4 on the right. Light touch was grossly normal bilaterally.
Reflexes - Reflexes were trace bilaterally at biceps and 1 bilaterally at brachioradialis. Patellar reflexes were 1 bilaterally. Ankle jerks were absent bilaterally. Both toes were down-going
Gait - Gait was steady but slightly antalgic. He could walk on his toes with moderate difficulty. Heel walking and tandem walk not tested. He weaved with Romberg testing.
Opinion: Difficulty with encoding/storage and retrieval, processing speed deficits, behavioral problems, peripheral neuropathy.

12/7/2018 Life care plan and cost analysis by Dan M. Bagwell, BSN, RN and David Altman, MD
He reported that the gabapentin was very helpful for his neuropathic pain in his right upper extremity and he was only taking the Norco sparingly. The gabapentin and Norco were refilled.
Mr. Colbath was evaluated by Raul Marin, M.D., in the Physical Medicine & Rehabilitation Clinic at the Center for the lntrepid [CFI] on 01/12/18. He reported pain, insomnia, and lower extremity edema, as well as feelings of survivor's guilt, anxiety, depression, hypervigilance, paranoia, avoidance behaviors, and hyper alertness. Elavil was prescribed to address his insomnia and gabapentin was refilled to address his nerve pain. Dr. Marin re-evaluated Mr. Colbath on 01/23/18 and noted that he had begun to ambulate without a cane. He reported that his neuropathic hand pain was most problematic, so his gabapentin dosing was adjusted. Dr. Marin re-evaluated Mr. Colbath on 02/09/18. He was instructed to

increase his gabapentin dose in the evening to 600 mg due to increased pain in his arm in the evenings. Mr. Colbath reported that the Elavil was helping with his sleep and he was to continue this.
Alex Willingham, M.D., began treating Mr. Colbath. At his follow-up visit on 10/16/18, Mr. Colbath reported that his PTSD symptoms had improved significantly and was no longer concerning him. Mr. Colbath was concerned about his increasing weight that was a result of no longer being able to work at his job, which required physical labor, and the stress related to his injuries. Dr. Willingham recommended consultation with a bariatric surgeon. Dr. Willingham opined that Mr. Colbath should continue to refrain from heavy physical labor on a permanent basis. ln follow-up with Dr. Willingham on 12/3/18, Mr. Colbath reported recurring dreams or nightmares related to the shooting event. Dr. Willingham noted that Mr. Colbath had symptoms of PTSD.
Education and work history: He is a high school graduate and completed 22-24 semester hours of college. He has taken numerous classes in automotive repair. He owns David Colbath Fence, LLC, which he started several years ago. Mr. Colbath reported earning $80,000 to $100,000 annually prior to the injury and has only made $7,000 to $8,000 the last five months. He reported that he has just about exhausted his savings and the Go Fund Me account established for him, and his son has stepped up to take on a greater role in the business. Prior to starting the fencing company, Mr. Colbath was self-employed for 25 years as the proprietor of David Colbath Transmission and Auto Repair.
Activities of daily living: About 4-10 nights per month, he gets no sleep at all due to pain and/or anxiety and then sleeps all day. He continues to manage his household finances and drive, but he has reduced his driving frequency and distances as possible.
Psychosocial: No obvious cognitive deficits. He was intermittently tearful and reported that he can't do a tenth of what he would like to do physically due to constant pain. He continues to suffer with insomnia and mental anguish as a result of the attack. It appears that he is participating in some treatment to include counseling and pharmacotherapy, which has improved his sleep somewhat. He continues with chronic pain and impaired function as a result of his injuries. He also suffers from PTSD due to the extremely violent nature of the event.
Care estimates: With the chronic use of many pharmacologic agents (NSAIDs), Gl prophylaxis is indicated to protect the gastrointestinal tract from gastritis and/or the development gastric/duodenal ulcers. While these medications can and likely will change over time, the specific categories of medications are reflected, with the average associated costs for those agents anticipated over the long term.
We also anticipate that Mr. Colbath will require intermittent physiotherapy (i.e. desensitization, modalities such as PT, OT, biofeedback, heat, massage, ultrasound, and range of motion exercises) to maximize function and quality of life, and most importantly, to prevent deterioration in his condition that can result from the long-term effects of impaired mobility. Will need effective coping strategies and to address psychosocial factors that often adversely affect response to treatment. ln addition to mood and emotional difficulties associated with chronic pain, sleep is typically impaired and further impacts one's ability to concentrate upon the day-to-day tasks required for occupational demands, family requirements, and household management. Additionally, Mr. Colbath had been diagnosed with posttraumatic stress disorder (PTSD). Chronic pain and loss of function complicated by PTSD associated with his injury have all negatively impacted Mr. Colbath's quality of life and mental state. lt appears that some of his symptoms with PTSD have improved and he has made some progress with his psychological functioning. Provisions for psychotherapy have been projected to assist Mr. Colbath with processing life changes and to develop coping strategies that will assist him as he ages with the sequelae of his injuries. lt is anticipated that he will require psychotherapeutic intervention intermittently over his lifetime due to the severity of his pain and the mechanism of injury. Psychiatric care for medication management is also projected over the next few years. Included modest personal care assistance in last decade of life.
Mr. Colbath has not been able to return to many of the tasks required for successful operation of his fence business. lt has been recommended by his physicians that he refrain from heavy physical labor

due to his injuries and subsequent disability. Vocational rehabilitation evaluation and counseling is indicated to determine if he is a candidate for retraining in an effort to pursue work within his physical ability. Dr. Willingham referred Mr. Colbath to a bariatric surgeon who has apparently opined that he is a good candidate for bariatric surgery to address the excessive weight gain encountered since this injury. We have included such surgery with this life care plan.

Summary of testing:

Labs:

6/5/2017

Uric Acid 8.9 (3.4-7.0) **High**

Hyperuricemia can lead to a disease called gout that causes painful joints that accumulate urate crystals.

2/9/18

Iron 53 (46-178)

Iron Binding Capacity Total 255 (260-430) - **Lower than normal**

Iron Saturation 21 (20-50)

Ferritin 84 (30-400)

6/26/2019

CBC, CMP Normal

HbA1c 5.5

Lipid panel – HDL 49, LDL 137 (< 130) **High**, nHDL 146 (< 130) **High**

Lead, blood **10.4** µg/dL (0-4.9) **High**

10/28/2019

Lead, blood **11.2** µg/dL (0-4.9) **High**

Concentration 5-9.9 µg/dL – Adverse health effects are possible, particularly in children under 6 years and pregnant women. For children and women who are/may become pregnant, reduce lead exposure. Concentration 10-19.9 µg/dL - Reduced lead exposure and increased monitoring are recommended. Concentration 20-69.6 µg/dL – Removal from lead exposure and prompt medical evaluation are recommended. Consider chelation therapy when concentrations exceed 50 µg/dL and symptoms of lead toxicity are present.

Left Forearm (AP And Lateral Views) Series Report on 08 Nov 2017

INDICATION: Left upper extremity swelling and hand weakness

Degenerative changes of the triscaphe joint. No acute fractures. Significant soft tissue swelling of the left forearm. Multiple punctate metallic densities of the proximal and distal forearm soft tissues. IMPRESSION: 1. Multiple punctate soft tissue densities of the proximal and distal left forearm. 2. No acute osseous abnormality.

Left Hand (AP, Lateral, And Oblique Views) Series Report on 07 Nov 2017

FINDINGS/IMPRESSION: Post-surgical changes from partial scaphoid resection are noted. No fracture. **Degenerative changes of the radiocarpal and intercarpal joints**. Tiny metallic objects are noted overlying the medial distal forearm soft tissues and the thumb proximal phalanx soft tissues.

Right Elbow/Foream (AP And Lateral Views) Series Report on 05 Nov 2017

FINDINGS/IMPRESSION: No fracture, dislocation, or osseous lesion. Extensive swelling of forearm, with scattered foci of subcutaneous emphysema. Scattered skin staples overlying the forearm and elbow.

Bilateral Ankles Series Report on 05 Nov 2017 Procedure
FINDINGS/IMPRESSION:
Right: Alignment is anatomic. Old osteochondral injury of the lateral talar dome. Bullet fragment is present in the soft tissues lateral to the lateral malleolus. Several other metallic densities are seen in the soft tissues of the mid tibia/fibula.
Left: Distal tibial gunshot wound with comminuted intra-articular fracture of the medial malleolus. Numerous tiny metallic bullet fragments are present in soft tissues some of which may be intra-articular.

Pelvid (AP ONLY) on 11/5/2017
No acute fracture. Numerous scattered metallic foreign bodies project over the lower pelvis with locules of soft tissue air noted at the level of the right side of the pubic symphysis. Nonobstructive bowel gas pattern. **Degenerative changes of the lower lumbar spine and bilateral sacroiliac joints**. IMPRESSION: Numerous metallic soft tissue foreign bodies in the lower right pelvis consistent with gunshot wound injury.

EMG/NCS 8/28/2018 (by Dr. William Janes):
Only bilateral upper extremities were tested.
The muscles were electronically silent at rest. There was no evidence of fibrillations, positive sharp waves, or fasciculations. Giant motor units with decreased recruitment seen in the right pronator teres and abductor pollucis brevis.
Impression: Unable to get response right median nerve indicating median nerve injury on right with moderate left cubital tunnel syndrome. The EMG revealed partial right median nerve injury as there was some presentation of muscle recruitment.

7/3/2019 Mini-Mental State Examination: Score: 30/30.

3/26/20 Testing: Montreal Cognitive Assessment (MoCA) 27/30
He lost one point in Visuospatial for being unable to correctly copy a picture of a cube. He lost one point for Delayed Recall. He lost one point for Orientation, not knowing the exact date (23rd).

Deposition of Mr. David Colbath (5/27/2020)
Mr. Colbath has been able to travel and speak extensively, he does this extemporaneously, without notes. He wrote 3 poems he published on Facebook. He estimates he has spoken “about his testimony” 25-30 times. He has flown to Georgia, Florida, Michigan, Colorado, and New York.
He is right hand dominant and his right thumb has “no strength” and his right hand is completely numb. He stated that when he got shot in the back, it severed his ulnar nerve and other nerves so when he uses his left hand, the ring and pinkie fingers are hypersensitive and start to burn and hurt which hamper what he can do. He stated he does not have full sensation in his left arm. He reported he cannot do what he used to because he does not have the strength he used to have and states he can still work but is “limited on what he can do.” He also stated his left ankle does not bend down.
Regarding his job, he stated can do the bidding on his own. He stated he can write and read what he has written. After the shooting he could not work for 10 months. He does not weld as much anymore because he will cramp up in the positions needed to weld.
Regarding medications for the nerve pain, he states he is supposed to be taking gabapentin but he “elected to not use it.” He takes Tylenol and ibuprofen at night and ibuprofen 2-3 times during the day.

He states he would "rather just get through it." He was asked if the medication "fogs your thinking on the job or the next morning when you try to get up" and he said yes. He also takes Adderall. The Adderall is "so I can concentrate and I can have clarity when I'm trying to think."
He stated he does not sleep well now but before the accident did not have any problems sleeping. He said the difficulty sleeping is likely more related to the pain or thinking about the shooting. He said he thought he had restless leg syndrome but that he had that checked out and it is not that. He said he was told the feeling is related to the nerve damage in the tips of his toes and through his feet, described as "an itch that you can't satisfy."
Mr. Colbath states he is currently 300 lbs. and was 270 prior the shooting. He said he got up to 346 after the shooting. He states he was recommended a weight loss doctor/bariatric surgeon by Dr. Willingham. He was told with the weight loss a lot of pain would dissipate. He said he could not afford the surgery.
Prior to the shooting he saw a chiropractor but stated he did not have back problems. He still sees a chiropractor for his back, 3-4 times since the shooting. He saw an orthopedist, mainly for his buttocks and was released from his care.
He continues to see a therapist, Terry Davis. He saw him regularly prior to the COVID. He also saw Dr. Chris Ticknor, a psychologist for evaluation.
He speaks about Dr. Todd and states he recommended he get the bullet that is still lodged between his ribs out to help with the blood lead levels in his body. However, he said his insurance is not paying for his doctor visits and this would be an elective surgery he would have to pay for out of pocket.
Past medical history: Mr. Colbath broke his right wrist twice 20 and 28 years ago, related to falling off a horse twice. He also had a left metacarpal fracture that was treated surgically. He was hospitalized for one day following a fall with bruising of left thorax in July 2016. Left hand surgery secondary to a motorcycle accident in 2015, when his metacarpal was operated on.
He had situational depression following a divorce 9 years ago, treated for about 18 months. He said he "went through a very very dark period…saw psychiatrist, psychologist…the only meds he was on was Ambien and Seroquel and both of them for sleep." He also had some anxiety during that time.
Regarding medications: he no longer takes gabapentin; he still has amitriptyline which he took for sleep but has not taken it for over a year. He is not on any antidepressant.
Possible future surgeries: left ankle and right hand.
Mental health: he would like to continue with counseling and work with his problems, unsure about Menninger Clinic. He mentioned his "spiritual life is wonderful."
When he mentions his short-term memory problem, he says "which I seem to have at times." He also mentions he has been told it is attributed to the lead levels in his blood.
Of note, he still pays child support and had to sell 50 of his 84 acres of his ranch to help pay his bills. When questioned by his lawyer about this, he agreed that he had to sell his property "because of your injuries and your inability to work as a result of the injuries in the shooting." His lawyer also questioned about why he is not taking his gabapentin, and he states one of the side effects he would have would be grogginess. Mr. Colbath agrees with his attorney when asked, "Is that what you have to do in order to avoid the side effects associated with taking medication that better controls your pain?" Mr. Colbath agreed that is what he had to do to make a living.

Opinion

Mr. David Colbath sustained numerous gunshot wounds (8 or 9 from direct shots and 3 from bullets/shrapnel that ricocheted) on 11/5/2017 in the mass shooting at the First Baptist Church in Sutherland Springs, Texas. He subsequently underwent multiple procedures including a right radial artery repair and right median nerve repair and an open reduction and internal fixation (ORIF) of left medial malleolus. Most of the whole bullets were removed within 2 weeks of the shooting, with another removed almost 2 years after the shooting due to pain. Mr. Colbath still has at least one retained

bullet/shrapnel in left leg and pelvis and one lodged in between his ribs. He continues to have weakness of his right thumb and numbness of his right hand, hypersensitivity in his left hand with ulnar sensory loss of his forearm with shooting pain, as well as left ankle pain. He stated he also has memory issues since the shooting. Mr. Colbath endorses difficulty sleeping, relating it to pain or thinking about the shooting. He stated he also has pain/itchiness in his feet at night when he lays down, which he thought could have been related to restless leg syndrome. However, he states restless leg syndrome was ruled out and he was told the feeling is related to nerve damage in the tips of his toes and through his feet from peripheral neuropathy related to elevated blood lead levels. He has also been diagnosed with PTSD.

Since the shooting in 2017, Mr. Colbath's blood lead levels were found to be elevated above the normal limit at 10.4 and 11.2 on 6/26/19 and 10/28/2019, respectively. In the expert report by Dr. Robert Todd, he states Mr. Colbath's elevated blood lead levels have led to memory/cognitive issues including difficulty with encoding/storage and retrieval, processing speed deficits, behavioral problems including personality changes and insomnia, and peripheral neuropathy that occurs at night and results in spasms. He goes on to say these "harmful effects/damages of lead toxicity in David Colbath" will be life-long. However, not only are these claims not supported by formal neuropsychological testing and EMG analysis, of which lower extremities were never tested, but Mr. Colbath also has several premorbid conditions that could be contributing to his symptoms. In addition, he has developed other conditions since the shooting which are treatable and have not been fully addressed at this time. These include partially treated depression and PTSD, untreated sleep issues, possible restless leg syndrome, concentration difficulties and worsened memory issues (had reports of memory issues in 2016), and chronic pain. At this time, Mr. Colbath is not taking an anti-depressant, sleep aid, or anything to help with nerve pain (amitriptyline was said to work in the past which helps nerve pain and sleep), and is not yet undergoing recommended intensive PTSD treatment, all likely factors contributing to his current symptomatology.

Regarding Mr. Colbath's previous comorbidities, he has suffered numerous injuries prior to the shooting. Five years prior to the incident, in 2015, he was involved in a motorcycle accident where he broke his left metacarpal which required surgical intervention. He fractured his right wrist twice, related to 2 episodes of falling off a horse. He was hospitalized for one day following a fall with bruising of left thorax in July 2016. He incurred previous injury to his ribs one year prior to the shooting. He also has evidence of degenerative changes in his left hand and forearm (triscaphe, radiocarpal and intercarpal joints), an old osteochondral injury of his right foot (lateral talar dome), and degenerative changes at the lower lumbar spine and bilateral sacroiliac joints, seen on x-rays at the time of the shooting (11/5/2017 – 11/8/2017), suggesting preexisting development. Prior to the shooting, Mr. Colbath did see a chiropractor but stated he did not have back problems. He has continued to see a chiropractor for his back 3-4 times since the shooting. He had situational depression and anxiety following a divorce 9 years ago and received treated for about 18 months. At that time, he stated he also took Ambien and Seroquel for sleep, endorsing previous sleep issues prior to the shooting. He states he has gained a significant amount of weight since the shooting that has prompted the recommendation of bariatric surgery (included in the life care plan and cost analysis by Dan M. Bagwell, BSN, RN and David Altman, MD). However, his current reported weight of 300 lbs. is actually similar to his premorbid weight prior to the shooting noted in Dr. Zincone's family medicine notes in 2016 and 2017, with a measured weight of 298 lbs. with an elevated BMI (**6/5/2017 Wt: 298 lbs., BMI 45.3**). Regarding his memory complaints, he also endorsed issues with memory in the previous family medicine progress notes on 1/19/2016 and 1/26/2016 visits where on review of systems, he was noted to endorse: positive for fatigue, positive for dyspnea (with mild exertion), positive for acid reflux symptoms ("heart burn"), positive for nocturia and

(x0-4), positive for **decreased libido** last 6 to 8 months, **positive for leg cramps (improving)**, **positive for memory loss (short term past year), positive for insomnia**. He also had complaints of moderate aching sharp pain in his left knee with swelling, along with previous symptoms of great toe pain and was concerned about gout in his 6/5/2017 appointment with Dr. Zincone. He has been found to have an elevated uric acid level in the past, consistent with gout which can contribute to pain in his joints including his knees, ankles and toes. These various complaints documented prior to the shooting on 11/5/2017, support evidence of pre-existing issues that are likely contributing to Mr. Colbath's current symptomatology. Thus, this supports further evidence that Mr. Colbath's current symptoms are likely not related to his elevated blood lead levels.

In addressing Mr. Colbath's current symptoms of memory issues, pain/peripheral neuropathy, PTSD, and sleep disturbance, it appears he has not been adequately assessed or fully treated up to this point in time. For example, his memory and attention issues are multifactorial and are likely related to undertreated anxiety, depression, and PTSD, as well as poor sleep associated chronic pain, PTSD leading to insomnia, and possible obstructive sleep apnea and/or restless leg syndrome. Regarding his anxiety, depression and PTSD, he stated he is not currently on an anti-depressant medication although he has been on some in the past and according to the notes had found them helpful (Celexa and Amitriptyline). Regarding his sleep issues, sleep hygiene plays a major role in attention and the ability to encode and retrieve short term memories, processing speed, word retrieval, and thought organization. In addition, his poor interrupted sleep is likely contributing to his complaints of daytime fatigue and grogginess, which he attributed to his use of pain medication and thus stopped using the gabapentin despite its benefits, thus worsening his chronic nerve pain. Amitriptyline also helps with chronic pain and sleep, which he has not taken in over a year. He said instead of taking one of these medications that may ease the pain, he pushes through and endures the pain to be able to function and make a living. On inquiry into the recommended sleep study ordered, it is documented that it was not completed yet. This study is needed for assessment of obstructive sleep apnea, restless leg syndrome, and insomnia in order to make the necessary treatment recommendations. Mr. Colbath stated in his deposition he was ruled out for restless leg syndrome however I cannot locate mention of evaluation and assessment of this in the records. He did have iron studies which revealed a low Iron Binding Capacity Total of 255 (260-430) and other iron measures on the borderline of low/normal, which can contribute to the development of restless leg syndrome and provides a possible target for treatment. Thus, all taken into account, there are numerous treatments and medication dose adjustments that can be made in the management of his mood, chronic nerve pain, and sleep disturbance that could ultimately improve his physical and mental functioning.

In addition to the undertreatment of various conditions, Mr. Colbath's current cognitive complaints have not been formally assessed with normalized neuropsychological testing. In the expert report by Dr. Todd, he addresses Mr. Colbath's current cognitive issues and remarks that his complaints are related to his elevated blood lead levels which cannot be treated and thus will be "life-long." Specifically, he states Mr. Colbath's elevated lead levels have led to memory/cognitive issues including difficulty with encoding/storage and retrieval and processing speed deficits. However, the errors mentioned in the report do not fall within the neuropsychological description of the Processing speed index (PSI): shown to measures one's ability to quickly and correctly scan details visually, observe and discriminate simple visual information, eye-hand coordination of symbols, and speed of grasping visual details. In addition, it appears some of his assessments are based on Mr. Colbath's performance on the Montreal Cognitive Assessment (MoCA), scoring a 27/30 on 3/2020. Mr. Colbath lost one point on delayed recall, one point on orientation for not knowing the exact date, and one point on difficulty copying a picture of a cube, which do not clearly illustrate long-term cognitive deficits. Of note he was tested with the Mini-Mental

State Examination on 7/3/2019 and scored a 30/30. Without formal neuropsychological assessment these claims and associated causes cannot be substantiated. Dr. Todd also states the elevated blood lead levels have caused behavioral problems including personality changes and insomnia. Mood disorders and specifically PTSD can contribute to behavioral changes and insomnia. Assessments by both a psychiatrist and psychologist state his cognitive complaints are likely related to his PTSD, which would be a more reversible cause should Dr. Colbath follow the recommendations of more intensive treatment. When he was receiving treatment at the CFI, he did report his PTSD symptoms had improved. Dr. Nikki Frousakis in 10/2020 stated **"this evaluator is unable to determine if his problems with concentration and memory stem from lead toxicity, are a symptom related to PTSD, or are a combination of both."** She recommended Mr. Colbath receive "a full course of evidence-based, trauma-focused psychotherapy with a highly skilled and trained mental health care provider. Success in treatment also requires Mr. Colbath to be fully engaged, regularly attend all treatment sessions, and strictly follow all treatment guidelines and recommendations. Trauma-focused psychotherapies, such as Cognitive Processing Therapy, Prolonged Exposure, Eye Movement Desensitization and Reprocessing, and Written Exposure Therapy, are the most effective and highly recommended type of treatment for PTSD." Dr. Ticknor's report stated "**David Colbath has now developed cognitive signs and symptoms that are very concerning. He reports memory loss, forgetfulness, concentration and focus difficulties and difficulty completing tasks. It is likely these symptoms are related to PTSD and depression and may or may not respond to more intensive counseling therapy. Another possibility is that Mr. Colbath may be experiencing long-term neurocognitive difficulties from toxic lead exposure from remaining bullet fragments in his body. From further examination, these symptoms come and go which would be uncharacteristic of dementia, but characteristic of the distractions, poor concentrations and cognitive impairment that often accompanies PTSD. He may have both PTSD and early dementia from trauma and lead exposure**." Medical literature further demonstrates the connection of memory deficits associated with depression and anxiety *(*Hubbard, NA, et al., 2015; Shelton, D & Kirwan, CB, 2013; Hubbard, NA, et al., 2016; Gaddy MA et al., 2014). Nevertheless, despite his numerous cognitive complaints, Mr. Colbath states he has been able to travel and speak extensively, and does so without the use of notes. He wrote 3 poems he published on Facebook. He estimates he has spoken "about his testimony" 25-30 times. He has flown to Georgia, Florida, Michigan, Colorado, and New York.

Dr. Todd also states the elevated blood lead levels have caused a peripheral neuropathy that occurs at night and results in spasms. However, the EMG Mr. Colbath had only focused on his upper extremities and revealed specific nerve palsies likely related to the physical gunshot injuries/surgeries and premorbid injuries. Additionally, his symptoms occur mainly at night and result in sensory symptoms of unrelenting itching in his toes as well as spasms/cramps, all of which could be explained by possible restless leg syndrome. Mr. Colbath was found to have lower than normal values on iron testing on 2/9/2018, as mentioned above, which could contribute to the development of these reported symptoms and for which he has not been treated.

Medical literature supports deficits seen in association with lead toxicity, however most deficits occur with long-term high blood lead levels, much higher than that seen in Mr. Colbath. In 1999, the Centers for Disease Control (CDC) and Prevention's Adult Blood Lead Epidemiology and Surveillance program defined an elevated blood lead level in an adult as 25 µg/dl or greater, and the Occupational Safety and Health Administration's (OSHA) level for medical removal from the workplace was 50 µg/dl or greater. According to a comprehensive review put forth in 2007 by an expert panel evaluating literature on lead-exposure in adults, the panel recommended that individuals be "removed from lead exposure if a single blood lead concentration exceeded 30 µg/dL or if two successive blood lead concentrations measured over a 4-week interval were ≥ 20 µg/dL. Removal of individuals from lead exposure was recommended

to avoid long-term risk to health if exposure control measures over an extended period did not decrease blood lead concentrations to < 10 µg/dL…. (Kosnett et al. 2007).

According to the Potential Health Risks to DOD Firing-Range Personnel from Recurrent Lead Exposure, put forth by multiple committees, "effects of occupational lead exposure on the peripheral nervous system at blood lead levels of 60-70 µg/dL are manifested as motor weakness with abnormalities in motor and sensory nerve conduction. No peripheral motor or sensory symptoms are known to occur at blood lead levels under 40 µg/dL." Changes in sensory nerve function occurred at blood lead levels of 28-30 µg/dL (Chuang et al. 2000; Bleecker et al. 2005). A calculated benchmark dose for postural sway (measure of balance) was at a blood lead levels of 14 µg/dL (Iwata et al. 2005). In addition, Thomas & Parry 2006 published that "Lead is toxic to multiple organ systems and isolated lead neuropathy is very uncommon. In children the major manifestation of lead exposure is encephalopathy. The adult brain seems relatively resistant to its effects, except in cases of massive acute exposure. Lead neuropathy usually occurs as the result of high levels of exposure, and at such levels other effects are almost invariably observed, including bone marrow suppression (anemia and leukopenia), gastrointestinal tract effects (GI hemorrhage, diarrhea), renal effects (proteinuria, renal failure), hypertension, and gout." Mr. Colbath did not exhibit these other physiological signs and symptoms typically seen in association with elevated lead toxicity, again questioning the true relation of his symptoms to his mildly elevated blood lead levels. In addition, he had preexisting symptoms of gout prior to the shooting.

In the paper by Krieg et al. 2005, aimed at assessing the relationship between blood lead levels and neurobehavioral test performance in a nationally representative sample of adults from the third National Health and Nutrition Evaluation Survey data (NHANES III), the authors showed that the results from the survey did not provide evidence for impairment of neurobehavioral test performance in adults at levels below 25 µg/dl, or at lead concentrations currently found in the general adult population of the United States. The analysis of the occupational studies showed that the exposed groups consistently performed worse on the simple reaction time and digit-symbol substitution tests. The average blood lead level of the control groups was 11.42 µg/dl. The average blood lead level of the exposed groups was 41.07 µg/dl, greater than 25 µg/dl and less than 50 µg/dl. From the Environmental Protection Agency 2006 Air Quality Criteria Document: "Evidence in support of EPA's conclusion included onset of diminished cognitive function and diminished psychomotor speed at a blood lead level of 18 µg/dL (Schwartz et al. 2001). Zimmermann-Tansella et al. 1983, "show that in occupationally exposed workers, blood lead levels ranging from 45 to 60 µg/100 ml induced significant performance deficits, while no impairment was observed in exposed workers with lead blood levels between 26 and 35 µg/100 ml when compared with a non-exposed control group. Lead exposure levels below 70 µg/100 ml were stated to be unrelated to the number and frequency of psychological symptoms as well as to most specific psychological complaints. Some specific symptoms such as concentration difficulties and forgetfulness appear sensitive to lead exposure but only above 50 µg/100 ml." Additional literature review demonstrates problems with cognitive deficits have been associated with elevated blood lead levels when the concentrations were 40 µg/dL or more, suggesting a dose-depend relationship, of which Mr. Colbath did not have.

While it is valid that Mr. Colbath's elevated blood lead levels are related to his gunshot wounds sustained as a result of the shooting, the blood lead levels do not fall within the ranges specified in the literature that would cause his reported deficits. Mr. Colbath has other conditions, both pre-existing and that have developed since the shooting, that could explain his current symptoms. Thus, within a reasonable degree of medical probability, I do not believe that Mr. Colbath's reported deficits are caused by his elevated lead blood levels resulting from the shooting on November 5, 2017. In addition,

without proper assessment and treatment of the multiple contributing factors related to his current complaints, it is difficult to state with accuracy that these deficits “will be life-long” permanent disabilities.

All my opinions are stated to a reasonable degree of medical certainty. I reserve the right to amend, supplement or change my expert opinions should more information and records become available during the course of discovery in this matter.

Very truly yours,

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